

6 March 2003  
Application No.09/885,226  
Docket: 1065

## b.) Amendments to the Claims

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1. (currently amended) A micro-optical component, comprising:  
an optical element, including a lens, for interacting with an optical beam; and  
a mounting structure for attaching the optical element to an optical bench;  
wherein the optical element is solid-phase welded to the mounting structure.
  2. (original) A micro-optical component as claimed in claim 1, wherein the optical element is thermocompression bonded to the mounting structure.
  3. (original) A micro-optical component as claimed in claim 1, wherein the optical element is thermosonically bonded to the mounting structure.
  4. (original) A micro-optical component as claimed in claim 1, wherein the optical element is ultrasonically welded to the mounting structure.
  5. (original) A micro-optical component as claimed in claim 1, wherein the optical element comprises a lens substrate.
  6. (currently amended) A micro-optical component, comprising:  
an optical element for interacting with an optical beam; and  
a mounting structure for attaching the optical element to an optical bench;  
wherein the optical element is solid-phase welded to the mounting structure  
and as claimed in claim 1; wherein the optical element comprises a microelectromechanical device.
  7. (currently amended) A micro-optical component, comprising:  
an optical element for interacting with an optical beam; and  
a mounting structure for attaching the optical element to an optical bench;  
wherein the optical element is solid-phase welded to the mounting structure  
and as claimed in claim 1; wherein the optical element comprises a Fabry-Perot tunable filter.

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8. (original) A micro-optical component as claimed in claim 1, wherein the mounting structure is fabricated from a metal.
9. (original) A micro-optical component as claimed in claim 1, wherein the mounting structure is metal coated.
10. (original) A micro-optical component as claimed in claim 1, wherein the mounting structure is coated with a thermocompression bond metal.
11. (original) A micro-optical component as claimed in claim 10, wherein the bond metal comprises gold.
12. (original) A micro-optical component as claimed in claim 1, further comprising depositing bond metal bumps on the mounting structure.
13. (original) A micro-optical component as claimed in claim 1, further comprising depositing bond metal bumps on the optical element.
14. (currently amended) A micro-optical system, comprising:
  - an optical element, including a lens, for interacting with an optical beam;
  - a mounting structure, the optical element being solid-phase welded to the mounting structure; and
  - an optical bench, the mounting structure being solder bonded to the optical bench.
15. (original) A micro-optical system as claimed in claim 14, wherein the optical element is thermocompression bonded to the mounting structure.
16. (original) A micro-optical system as claimed in claim 14, wherein the optical element is thermosonically bonded to the mounting structure.
17. (original) A micro-optical system as claimed in claim 14, wherein the optical element is ultrasonically welded to the mounting structure.

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18. (original) A micro-optical system as claimed in claim 14, wherein the optical element comprises a lens substrate.

19. (currently amended) A micro-optical system, comprising:  
an optical element for interacting with an optical beam;  
a mounting structure, the optical element being solid-phase welded to the  
mounting structure; and  
an optical bench, the mounting structure being solder bonded to the optical  
bench, as claimed in claim 14; wherein the optical element comprises a microelectromechanical device.

20. (currently amended) A micro-optical system, comprising:  
an optical element for interacting with an optical beam;  
a mounting structure, the optical element being solid-phase welded to the  
mounting structure; and  
an optical bench, the mounting structure being solder bonded to the optical  
bench, as claimed in claim 14; wherein the optical element comprises a Fabry-Perot tunable filter.

21. (original) A micro-optical system as claimed in claim 14, wherein the mounting structure is fabricated from a metal.

22. (original) A micro-optical system as claimed in claim 14, wherein the mounting structure is metal coated.

23. (original) A micro-optical system as claimed in claim 14, wherein the mounting structure is coated with a thermocompression bond metal.

24. (original) A micro-optical system as claimed in claim 23, wherein the bond metal comprises gold.

25. (original) A micro-optical system as claimed in claim 14, further comprising depositing bond metal bumps on the mounting structure.

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26. (original) A micro-optical system as claimed in claim 14, further comprising depositing bond metal bumps on the optical element.

27. (withdrawn) A process for assembling an optical system, the process comprising:

solid-phase welding an optical element to a mounting structure; and then attaching the mounting structure to an optical bench.

28. (withdrawn) A process as claimed in claim 27, wherein the step of solid-phase welding the optical element to the mounting structure comprises thermocompression bonding the mounting structure and the optical element.

29. (withdrawn) A process as claimed in claim 27, wherein the step of solid-phase welding the optical element to the mounting structure comprises thermosonically bonding the mounting structure and the optical element.

30. (withdrawn) A process as claimed in claim 27, wherein the step of solid-phase welding the optical element to the mounting structure comprises ultrasonically bonding the mounting structure and the optical element.

31. (withdrawn) A process as claimed in claim 27, wherein the step of attaching the mounting structure to the optical bench comprises solder bonding the mounting structure to the optical bench.

32. (withdrawn) A process as claimed in claim 27, wherein the step of attaching the mounting structure to the optical bench comprises:

depositing solder material on solder mating surfaces of the mounting structure and the optical bench;

reflowing the solder material to join the mating surfaces.

33. (withdrawn) A process as claimed in claim 27, wherein the step of solid-phase welding the optical element to the mounting structure comprises coating weld mating surfaces of the optical element and the mounting structure with bond material.

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34. (withdrawn) A process as claimed in claim 27, wherein the step of solid-phase welding the optical element to the mounting structure comprises coating weld mating surfaces of the optical element and the mounting structure with gold.

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